Vol. 1 No. 3

THE P·T·REVIEW

PUBLISHED BY
AMERICAN WOMEN'S PHYSICAL
THERAPEUTIC ASSOCIATION

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THE
P·T·REVIEW

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Editorials

The Compensation Complex

THE situation in regard to compensation for Reconstruction Aides disabled in the Service seems to be this: As civilian employees, Aides are included in "An Act To provide compensation for employees of the United States suffering injuries while in the performance of their duties, and for other purposes," approved September 7, 1916. Under that ruling an Aide may receive for total disability a maximum compensation of $66.67 a month and a minimum of $33.33 (the adjustment being dependent upon her former salary) and for partial disability a percentage of the difference between her present and her former salary. By Mr. Underwood's amendment—which of course applies to Aides—a provision was added by which those employees injured during the World War might put in their claims for compensation at any time within a year from the date of the passage of the said amendment. (Originally, claim for compensation had to be made at the latest within one year from the date of injury.)

The Merritt bill, which proposed to extend the provisions of Section 300 of the War Risk Insurance Act to Reconstruction Aides and to some others (thereby allowing those indicated a higher rate of compensation, and including them with the enlisted personnel of the army) failed to pass. As usual, the objection raised was that the Aides' technical status as civilian employees meant that if they were included as the Merritt bill provided other civilians, as well, might logically be so included.

In both cases the actions taken are due to a misconception of the facts, which in turn is due to the mixed status of the Aides.

All Aides who served overseas and many who served in the United States know quite well that they were subject to the same army regulations as were the nurses. They took the oath when they entered the service, and they were not free to leave the service until the War Department saw fit to give them their discharges. Throughout the period of their foreign service Aides were consistently treated as part of the A. E. F. Nevertheless, Aides are now classed as civilian employees, in spite of the fact that their original appointments did not so designate them—although some of the later dis-

charge papers did—and in spite of the character of their war-time service.

To confuse the issue still farther, Aides receive the civilian employees' "additional compensation" (usually called a "bonus") and some Aides were allowed to live "off the post," and for that reason were given the $62.50 for commutation of rations and quarters.

We have said that the present situation is due to a misconception of the facts. That is true, but the misconception—which was current long before the taking of the congressional actions just discussed—has sometimes been of such quality that it appears to us to deserve a paragraph quite to itself. Particularly is that true of the foreign service of Reconstruction Aides.

Overseas, if there was emergency work to be done—and there *was*, and it was not infrequently of a risky character, such as the nursing of pneumonia and "flu" cases—if there were rules of dress and conduct to be observed—if there were hours to be kept—in short, if there were lines to be toed—we were, to all intents and purposes, as drastically military in status as hobnails and hardtack. But if the question was one of life insurance, or of a new issue of clothes, or of the dozen and one minor benefits that accrued to established military standing, nothing could have been more civilly civilian than we.

One cannot but wonder, however feebly, at the quality of gray matter behind all this—behind, particularly, the question of life insurance. In that connection, something less excusable than misconception was at work.

For, putting aside for a moment the question of whether we were military in status,—and in the light of what was required of us, what else could we have been?—and assuming us to have been Simon-pure civilian, what then?

A torpedo fired by a submarine on the journey overseas would (we are to suppose) have swerved aside from any civilian body in its path and would have plumped itself into pectorals of legitimate military standing. In the same way, a meningitis or "flu" bug would not have dreamed of attacking a non-military membrane; tissues that had not been duly sworn in would never have tempted its ingenuity. So why should non-military personnel (non-military, that is, so far as military benefits are concerned) be burdened with life insurance? *"With, but not of, the A. E. F."*—what colossal, what delectable,

senses of fun the originators of the phrase must have had!

Efforts to discover the original status of Reconstruction Aides, and to determine how the creation of such a body was officially authorized, have been entirely and characteristically unsuccessful. A two months' inquiry produced a number of vague and conflicting stories about this unpopular bit of war-time history; and an honest attempt by a certain representative to discover what was necessary to give Reconstruction Aides military status and to make such provision retroactive (or to give the Aides' work during the war recognition as military service) left the inquiry exactly where it started.

The war is so completely over that there does not seem to be much hope—if indeed there ever was any—of accomplishing a reform in short order. The only practical suggestion that remains is: Watch for opportunities to state the case of the Aides. Mr. Merritt evidently understands our problem, and so do a number of others who are in a position to help solve it. Through the few army Aides and through the Aides in the Public Health Service we have still some connection with the Government. It may be that some day, if we all pull together and make it known that we are willing to sacrifice the financial and social advantages of civilian rating for the sake of a consistent military status, we will, by getting ourselves officially ranked as members of the army, bring to a satisfying conclusion the whole cumbersome and wasteful discussion.

The American Legion and the American Aide

Much of what we have said about the question of the Aides' status bears directly on the question of their eligibility—or, it would appear, ineligibility—to membership in the American Legion, for the objection that blocked the passage of the Merritt bill is the same one that the Legionaires are raising to exclude Aides from their organization. The following excerpt from a letter from John Thomas Taylor (Vice Chairman, National Legislative Committee, American Legion) to Mr. Marquis James (Director, American Legion News Service) was forwarded by Mr. James to an interested Aide, who in turn forwarded it to the P. T. Review. In the light of what we have said about the status of Aides, the communication is amusing, though scarcely illuminating.

"Shortly after this country's entrance into the war, the Surgeon

General's Department employed certain women to be known as Reconstruction Aides and like soldiers they took the oath of allegiance to the United States and were virtually considered as enlisted personnel. They were retained, however, as civilian employees for the reason that their compensation would be greater.

At both Conventions of The American Legion proposals have been made to change the Constitution so that these Reconstruction Aides might become eligible for membership in The Legion as Yeomanettes and Army and Navy nurses. In view of the fact, however, that they were civilian employees of the War Department no action was taken by the last Convention to allow them to become members.

These women who were Reconstruction Aides might be considered as eligible to membership in The Legion for the reason they were enlisted, but if membership is granted to them it will establish a precedent which will allow all civilian employees of the War and Navy Department to become eligible. In addition to this, probably all welfare workers of the different organizations in this country would immediately claim membership were one class of civilian employees granted membership to The Legion.

In view of the precedents that this would establish, and in view of the failure of the Convention to take any action looking towards the eligibility for membership, I do not consider it wise at this time to hold out any hope to these Reconstruction Aides for membership in The American Legion."

NOTICE!!

The P. T. REVIEW wants good material. Send anything that might be of use—news items, jokes, short articles or cartoons—to Miss Elizabeth Wells, 46 Waverley Street, Brookline, Mass.

The REVIEW cannot pay for any accepted material. Unuseable manuscript that is submitted with a stamped envelope will be returned.

Suggestions for the Treatment of Nerve Injuries

K. WINFIELD NEY, M. D.*
New York, N. Y.

THE great number of nerve injuries occuring among the casualties of the past war, has given us a much clearer conception of the clinical manifestations of such lesions, and this experience has resulted in the evolution of definite therapeutic aspirations.

A brief survey of the clinical course of nerve injuries and their regenerative syndrome, will help materially in directing our attention to those therapeutic indications which tend primarily to inhibit the degenerative changes occuring in tissues whose function and nutrition is impaired by a nerve lesion. It is obvious that before these therapeutic problems can be properly considered, it will be necessary to appreciate certain pathological factors involved. To successfully apply physiotherapeusis, it is essential to understand not only the clinical manifestations of nerve injuries, but also the function of each muscle entering into or modifying the clinical picture.

When a nerve has been interrupted, there results an abolition of motor function in the muscles governed by that nerve; they waste from lack of use and impaired nutrition; they undergo fibrous transformation; they become stretched, or may develop fibrous contractures. The normal antagonistic muscles having their action modified tend to develop spastic contractures; they develop pernicious habits in the assumption of trick movements by their endeavor to compensate for function lost in the paralyzed muscles. In joints where function is modified as a result of the paralysis, amplitude of motion becomes more and more restricted, because of fibrous changes occurring in the periarticular structures. These factors must be fully appreciated, for, the treatment is fundamentally directed to the prevention of such complicating sequalæ. Experience has led us to believe that these changes may be very markedly inhibited by well directed, persistent treatment, but if muscles have been allowed to become extensively indurated and joints fixed by fibrous tissue, their correction becomes, with time, increasingly difficult.

Nerve injuries vary in degree; they may be partial or complete; they may be in the nature of compression, or of complete anatomical

*Formerly Chief of Neuro-Surgical Service, United States Army General Hospitals Nos. 3 and 41

division. The anatomical structure of a nerve may remain intact, though its physiological continuity be disturbed,—physiological interruption—usually due to contusion or compression. In anatomical interruptions, the nerve trunk may be partially or completely divided, and when the conducting fibres—the neuraxons—are divided, their distal segments completely degenerate, and the nerve trunk below the lesion consists of empty channels, from which the active conductive element has disappeared by degeneration and absorption. Regeneration consists in the outgrowth of the neuraxon from the point where it was divided, down through the emptied channels of the distal nerve segment to its motor or sensory end-plate. When a nerve has been divided, scar tissue may form between its ends, and the neuraxons of the proximal portion of the nerve trunk may not be able to penetrate through the scar and reach the distal segment; this is often the case in nerve injuries, and before regeneration can proceed, it is necessary, by surgical intervention, to resect the scar from between the nerve-ends, and accurately oppose the divided nerve trunk by suture. The down-growth of the neuraxon through the conducting channels of the old trunk is a very slow process, progressing probably at the rate of 1 to 1½ millimeters per day, so that many months are usually required before the nerve fibre connects up with its motor end-plate in the muscle fibre to which it has been directed. After this neuromuscular junction has been re-established, it is necessary before function can return, that volitional motor impulses be able to travel through the regenerated nerve. These muscle fibres have so long been separated from the central nervous system, that psychological and physical re-establishment presents certain definite problems in re-education: first in the directing of voluntary impulses through the regenerated nerve; secondly, the placing of the effort in effecting a definite action; thirdly, in producing muscular co-ordination and the development of power. Following the paralysis, nature, to compensate for the loss of a given group of muscles, acquires trick or substitution movements, by which a normal group of muscles attempts to assume certain functions which will assist to a greater or lesser degree in the imitation of those movements normally executed by the paralyzed muscles. These substitution movements easily develop into habit complexes, and with the re-education of an extremity after a nerve injury of considerable duration, there is frequently great difficulty in overcoming

these substitution movements, which are continued by habit.

When a muscle has been deprived of its nerve supply, it undergoes a series of changes which in relation to its electrical excitability constitutes the reaction of degeneration. The denervated muscle no longer reacts to faradism, and though it is at first hypersensitive to the galvanic current, the degenerative changes in the muscular tissue progress eventually to a degree in which the muscle has undergone almost complete fibrous transformation,—a condition in which it fails to react to any applicable electrical or mechanical stimulation. This is what we might term the complete reaction of degeneration, which means the total absence of those physiological reactions which characterize muscular tissue. While this degeneration and fibrous transformation is taking place in the denervated muscular tissue, a similar transformation is developing in the surrounding tissues; more particularly manifest in the periarticular structures and tendon sheaths, greatly interfering with both active and passive joint function. Frequently, the fibrotic transformation in muscles becomes so extreme as to produce severe contractures with marked deformity. This is especially true in irritative lesions. At other times, the paralyzed muscle undergoing fibrotic degeneration may be greatly stretched by the action of antagonistic muscles and the development of trick movements. The stretching of a muscle which has lost its tone, and to a great extent its elasticity, is productive of disastrous results, in that after complete regeneration of the nerve, the stretched muscle fibres are unable to reassume their primary function of contraction.

The surgical treatment of nerve injuries consists almost entirely of the removal of scar tissue, which interferes with regeneration or the physiological activity of a nerve, but after a nerve is freed from scar tissue or its ends sutured, the course of regeneration has just begun, and the treatment, from this period, falls almost entirely in the domain of physiotherapeutics.

STAGES OF REGENERATION

We may divide the period of nerve regeneration into three definite clinical stages, and a consideration of each stage will suggest the therapeutic procedures to be instituted:

The *first stage* constitutes the period during which the regenerating neuraxon is growing from the point of its division to

the muscle, with, the re-establishment of its neuromuscular junction.

Second stage: the interim after the establishment of this neuromuscular junction (the restitution of the sense of muscle function), until the appearance of voluntary muscular contractions.

Third stage: from the first appearance of voluntary motor power, to the period of complete motor restoration.

TREATMENT

The treatment during the *first stage* consists in:

1. Maintaining nutrition through the stimulation of blood and lymph circulation, and the inhibition of fibrous transformation of muscular tissue.

2. The prevention of muscle stretching or the formation of contractures.

3. The prevention of fibrotic limitation of joint function.

Second stage: a continuation of the above treatment with the addition of:

1. Psychological treatment directed to the re-establishment of the power to transmit volitional impulses through the regenerated nerve.

Third stage:

1. The psychological direction of impulses for definite muscle movements.

2. The development of power in the regenerating muscles.

3. The re-establishment of muscle co-ordination with the elimination of compensatory habit trick movements.

TREATMENT DURING THE FIRST STAGE

The maintenance of nutrition and the elimination of waste products in tissues which have been deprived of their nerve supply, is markedly favored by massage and thermotherapy. The lymphatic circulation is best stimulated by muscle kneading—pétrissage—while light stroking,—effleurage—improves the capillary circulation: —both should be directed from the periphery to the center. These procedures while maintaining nutrition, tend materially toward the prevention of fibrous induration. Massage should never be used in the presence of an acute infection, as the manipulation of infected tissues tends to disseminate the infecting agent. In old infected wounds or chronic osteomyelitis, however, massage may be used above and below the lesion. Superificial scars which are adherent to underlying structures can usually be liberated by vigorous

massage, but should such a procedure be followed by a strong reaction with inflammatory symptoms, it should be immediately discontinued.

Massage, in nerve lesions, should be preceded by thermotherapy and electricity. Moist heat in the form of a whirlpool bath, is perhaps the best means of preparing the limb for electrical treatment and should be continued for five or ten minutes. The hot parrafin bath is of considerable value when used as an adjunct to massage, but is not satisfactory as a preliminary procedure to electrical treatment.

Joint restriction—pariarticular fibrotic infiltration—is best prevented by passive and active manipulation of the joint through practically its entire range of motion. Great care must be used, however, in this procedure, to prevent the overstretching of paralyzed muscles. In the manipulation of joints it is essential that pressure be directed in a manner that will bring the joint surfaces in forcible apposition—this pressure movement tends to prevent the "atrophy of disuse" which takes place in bones and joints subjected to prolonged periods of splinting or inactivity—it resembles the pressure exerted on joints by muscular action. Each joint of an extremity must receive careful attention; its normal range of motion in every direction should be imitated by passive movement. Careful records of the amplitude of joint motion with metrotherapy measurements, when possible, should be kept, and frequent reference to these recorded measurements will reveal a tendency toward the development of contractures; it will also indicate the efficiency of treatment when such is instituted for the correction of joint limitation. In the manipulation of joints, while it is important to prevent undue stretching of the paralyzed muscles, it is essential that the normal muscles be stretched to their limit, which procedure will assist in the prevention of tonic contractures. When there is a limitation of joint function due to fibrous contractures developing in the paraylzed muscles, joint manipulation directed to their stretching is required; this, however, must be done with exceeding care, for overstretching may produce serious damage to ultimate muscle function.

ELECTRICAL TREATMENT

Electrical treatment is directed primarily toward the maintenance of contractility in the muscle fibres. It is well known that

the function of a muscle is greatly impaired by non-use, even though its nerve and blood supply are normal. When a muscle has been deprived of its nerve supply, degeneration of its fibres takes place rapidly, and if allowed to continue untreated, progresses to a state of almost complete fibrous transformation. A denervated muscle will not react to faradic stimulation, but galvanism, because of the nature of the current is capable of direct muscle stimulation. The beneficial effect to be derived from electrical treatment depends entirely upon its ability to stimulate muscle contractions, which in turn tends to improve the nutrition of the muscle fibre and to inhibit fibrous transformation. Electrical stimulation does not seem to retard materially the atrophy resulting from nerve injuries, but experience seems to indicate that muscles so treated preserve their contractile elements and do not progress to that state of complete degeneration observed in untreated muscles. The application of electrical treatment should, therefore, be directed primarily to the induction of muscular contractions in the paralyzed muscles. Individual muscle stimulation should be attempted in preference to group stimulation, because, in the latter, many individual muscles may be overlooked. It is important that records be kept showing the degree of electrical irritability maintained in each muscle and frequent references to these records will indicate the results achieved by treatment. The operator should be careful to tabulate not only the degree of the muscle responses elicited, but also the nature of the contraction and the amount of current required to elicit same. The current should be applied in such a way as to prevent its overflow into normal muscles; the stimulation of which will have a tendency to over-develop healthy antagonists.

It is essential during treatment and at all other times, that the paralyzed muscles be not overstretched: for instance, in a musculospiral lesion when the arm is removed from the splint, the wrist should not be allowed to drop, and, during treatment, the hand and wrist should be securely supported;—the overflow of the current, if these precautions are not taken, might produce a marked flexion of the wrist resulting in overstretching of the paralyzed group. The electrical treatment should last sufficiently long to elicit 10 or 15 contractions in each muscle.

A very good routine to follow in the daily treatment, consists first,—in the immersion of a paralyzed limb in a hot whirlpool bath

for five minutes, followed immediately by the electrical treatment, after which, ten or fifteen minutes of massage for the purpose of eliminating the waste products created by the electrical stimulation and promoting nutrition by improving blood and lymph circulation.

The stretching of a paralyzed muscle is a serious complication, greatly inhibiting the return of voluntary motor function: it is very common in musculospiral and sciatic lesions: an unsupported "wrist-drop" and "foot-drop" may so impair the paralyzed muscles, that even though the nerve has successfully regenerated, the stretched muscles are unable to respond to motor impulses. (Very often, a stretched muscle with intact nerve supply will develop signs of complete degeneration.) Substitution or trick movements are a frequent cause of muscle stretching, as is also the careless use of electrical stimulation, during which if the wrist or foot is not adequately supported, a current overflow in the normal muscles may produce vigorous contractions throwing great strain on those which are paralyzed.

The prevention of muscle stretching is best accomplished by the persistent use of relaxation splinting; the more common type of such splint being the "cock-up" splint for musculospiral paralysis, and the "drop-foot" splint for sciatic paralysis. These splints should be continuously worn, and those adapted to both night and day wear, should always be available.

Tonic contractures frequently develop in the normal muscles of an extremity, when the antagonists are paralyzed, and particularly if splints have been neglected; it is of great importance during manipulative treatment that the normal muscles be stretched to prevent this type of contractures. The most notable examples of tonic contractures are seen in external popliteal lesions, where the gastrocnemius, unopposed, produces constant plantar flexion of the foot, which soon develops into a contracture—"short achilles tendon"—and in turn causes marked stretching of the paralyzed anterior group (dorsal flexors of the foot). Even in complete sciatic lesions, where all muscles below the knee are paralyzed, if splinting does not properly support the foot, fibrous contractures frequently form in the paralyzed gastrocnemius. The early recognition and correction of developing contractures is of utmost importance, and may prevent serious complications, but, if neglected, may ultimately defeat the aims of months of treatment. These possibilities will indicate

the importance of making frequent metrotheraphy readings for checking the exact status of joint function.

While relaxation splinting of paralyzed muscles is of great importance in the prevention of their stretching, this splinting if not properly controlled, may result in serious joint limitation, which not infrequently becomes more disabling than perhaps the original paralysis. The possibility of periarticular fibrotic limitation in partially immobilized joints, demands that when splints are used for the prevention of muscle stretching that these splints be daily removed, and, under careful supervision, each joint must be made to undergo complete passive excursions effecting its full range of motion. Careful attention of these manipulative procedures should almost entirely eliminate serious interference with joint function. The electrical stimulation of individual muscles will tend to prevent the development of the fibrous implication of tendon sheaths, a condition which seriously restricts joint activity and, ultimately, the restoration of muscle function.

TREATMENT DURING THE SECOND STAGE

With the paralysis of muscles following a peripheral nerve injury there results a loss of deep sensation—muscle sense—as well as superficial sensation in the cutaneous distribution of the injured nerve. When muscle sense is lost, the patient is unable to consciously place an effort at muscle function in the paralyzed group—the endeavor to lift the wrist in a musculospiral paralysis is not associated with the sensation of being able to accomplish the specific movement; when, however, the nerve has regenerated to its end-plate in the muscle, deep sensibility is regained, and the presence of the muscles involved again enters consciousness, i. e., the patient experiences the sensation of definite muscle effort—he feels that the wrist should lift by this effort, though such an attempt may not be associated with any visible manifestation of power. This is the psychological restoration of function and may precede voluntary motor action by weeks or months. The second stage begins with this psychological restitution of the muscle and it ends with the return of voluntary power. Frequently, regeneration does not progress beyond the second stage; the patient feels that he has the power to move the paralyzed muscles, but his efforts are not rewarded with success. This disability may be continued because of the following

conditions: First, the inability of the individual to force a satisfactory motor impulse through the regenerated nerve to the muscle. Secondly, muscles because of continued stretching, are unable to respond when a definite impulse reaches them. These two factors are responsible for much of the retarded restitution of function following nerve injuries.

The treatment during the second stage consists of the continuation of that instituted for the first stage, and, in addition, psychological treatment for the purpose of effecting the passage of volitional impulses through the regenerated nerve. Such treatment is directed to assisting the patient in procuring a successful volitional impulse. This should be possible within two or three months after psychological restitution.

In testing for the first appearance of voluntary function, great care must be used in the elimination of gravity; and frequently the examiner is rewarded by feeling just a slight movement in the muscle tendon. Patients are usually surprised at the discovery of their first successful volitional impulse; the movement is very weak and the effort associated with great fatigue. There may be a lapse of several days before the patient can again reproduce the motion, during which time he feels that he has again forgotten the mechanism of the movement,—which means that he has forgotten how to force a motor impulse through the nerve. Some patients are very much longer in regaining this power than others, but we are convinced that with proper assistance in the form of psychological treatment, the second stage may be greatly shortened.

Psychological treatment is best instituted during interrupted galvanic stimulation of the muscle, during which the patient's attention is concentrated on the muscle receiving stimulation. The operator counts, and with each count an impulse is passed through the muscle; also, at each count, the patient makes a vigorous endeavor at volitional contraction of the muscle being stimulated. In this way his kinesthetic sense is being rebuilt; that is, he is learning the sensation produced by the contraction of the individual muscle, and at each count, he is endeavoring to reproduce that sensation. The operator while continuing the count may, occasionally, omit the passage of the galvanic impulse, though the patient continues to make his effort unassisted by the electrical stimulation, and he is frequently rewarded at this time, with the first manifestation of unassisted

voluntary contractions. This treatment should be persisted in daily until it is possible to force impulses through at will, and, with this accomplished in all of the formerly paralyzed muscles, this type of psychological treatment may be discontinued.

TREATMENT DURING THE THIRD STAGE

The treatment during the third stage (after definite voluntary motor power has been restored), consists in psychological treatment somewhat similar to that of the second stage, but differing in this respect, that the patient is here taught to direct impulses for definite co-ordinated movements. This becomes in reality a question of re-education, because certain nerve fibres which originally controlled a given muscle, or muscles which governed a special function, may now be directed to another group. It is not an unusual experience in brachial plexus lesions, to find that attempts to extend the wrist will result in flexion, or that attempts to flex the arm produce extension. These disturbances of function and defective muscle sense are frequently exceedingly difficult to correct. They are present to a greater or lesser degree in almost every sutured nerve. Treatment consists in working out or untangling the muscle complex, and demonstrating to the patient the effort required to accomplish a given movement. Efforts of this kind at first require a definite psychological direction, but with practice become habitual. This re-education is analogous to that required following tendon transplantation. Occasionally, however, the arrangement is not so favorable and re-education may become exceedingly difficult. While the patient is learning to make a corrected movement, his whole attention should be concentrated on this effort, first to execute the movement satisfactorily, and to familiarize himself with the sensation experienced in reproducing that movement—the re-education of the kinesthetic sense. Movements at first should be slowly and carefully executed, later increasing in rapidity.

Splinting for the relaxation of weak or paralyzed muscles must not be discontinued until muscle strength has developed sufficiently to hold the extremity in its normal position. When a splint has been removed before muscles have completely regained their power, the limb should be carefully watched and any manifestations of returning "wrist" or "foot-drop," etc., should immediately cause the reapplication of relaxation splints, it always being borne in mind that a

muscle will not gain power so long as it is being overstretched; in fact, overstretched muscles will frequently lose the power they have gained. It should always be the aim of the operator in re-educating muscles or in increasing their strength, tc at first endeavor to restore range of motion, rather than strengeth, and this is best accomplished with the elimination of gravity. After the full amplitude of muscular action has been attained by *assistive* exercises, attention should be directed to *resistive* exercises for the development of strength.

The re-establishment of muscle co-ordination with the elimination of compensatory habit movements, is both important and difficult. These habit trick movements frequently persist long after the paralyzed muscles have regained power, and their presence greatly disturbs the functional co-ordination of the extremity. It is very common to see a regenerated musculospiral case, which is unable to extend the wrist effectually, because the flexors of the wrist persistently contract simultaneously with the extensors—this is the result of a substitution movement, now a habit, which the patient early developed in producing extension of the fingers. It is also very common to find that attempts at extending the thumb result in marked contractions in the muscles of the thenar eminence, which is also the remains of a trick movement. Often the correction of such obstacles to muscle co-ordination will tax the operator's ingenuity, and each case requires a definite study of individual muscle function before a successful outline of re-educational treatment can be given, but for the ultimate re-establishment of a useful co-ordinating extremity, these conditions must not only be recognized but anticipated, and throughout the entire course of treatment these factors must be ever in mind, and attention directed as much to their prevention as to their cure.

The surgical treatment of nerve injuries presents many factors of extreme importance in questions of technique, and an error in judgment or a slip in technique may be responsible for more or less unsatisfactory terminal results, in so far as ultimate function is concerned; yet the after care is of such importance that a failure to early recognize and correct these complications which seem to be more or less inherent to all nerve injuries may completely defeat the aim of treatment and annul the results of the most brilliant operative procedure.

Here and There

Janet Gillespie and Anna Orr have been transferred to P. H. S. at Palo Alto.

Sibyl Stone, former Lakewood and Fox Hills Aide, and President of the Woman's Physical Therapeutic Association of Boston, writes that her trip to Europe has been most successful.

Margery Boylston, (Lakewood and Fox Hills) was married on July 18 to Mr. Archibald Blanchard, and will make her home in Deep River, Conn.

Nina Haugen is Head Aide at Letterman. She takes the place of Nellie Godbolt, who is to be married soon.

The following Aides, formerly at Fox Hills, are on duty at the Polyclinic Hospital, New York City: Margaret Keith, Margaret Watson, Agnes Sussdorff, Freda Reuther, Louise Shuman, Dagny Peterson, Gertrude Rockwood (Mrs. Owen Smyth), Rowena Russell.

Helen Parrine and Margaret Andrews are substituting at Hahneman Hospital.

Mrs. C. R. Westbrook, (Cleo Pattison) who now lives in San Jose, called on the P. T.'s at Hahneman Hospital not long ago.

Ogla Carlson, of Camp Lee, Walter Reed, McHenry and Marine Hospital, Stapleton, was married on March 5th to Mr. C. L. Stein, ex-service man.

Miss Mary Waite, formerly Red Cross worker at B. H. 114, Beau Desert, and at Coblenz, Germany, is now a Field Secretary of the Atlantic Division of the American Red Cross, with headquarters at Ithaca, N. Y. Miss Waite and Miss Earle, (also formerly of B. H. 114) met quite by accident at Liberty, N. Y., where the former was temporarily supervising the work and the latter was hospitalized. The group of six ex-army girls in town entertained Miss Waite at dinner in the Withensen House, where they stay.

Ina Atwood (Lakewood and Fox Hills), who has been army hostess at Camp Eagle Pass, Texas, since November, 1920, went home on leave this summer, stopping *en route* to visit Adelaide Hussey, who is on duty at the P. H. Hospital, Houston, Texas.

Myrna Howe has left the P. H. S. at Parker Hill (Boston) and has gone to San Francisco to work with Dr. Baldwin.

Juanita Metherall has left the Employer's Liability Insurance

Corporation, Boston, to start the P. T. clinic, under the direction of Dr. Joseph Shortell, at the Federal Mutual Liability Insurance Co., 142 Berkeley St., Boston.

Elizabeth Hampe, formerly in P. H. S., Ellis Island, has been doing some work with Dr. Seaver (Boston) this summer.

Juliette Bell, P. H. S., Parker Hill (Boston) is taking a job in San Francisco.

Miss Sanderson has spent much of her summer holiday at her home in Duxbury, Mass.

Amy Baker (P. H. S., Polyclinic, N. Y.,) sailed Sept. 7 for six months' service with the American Committee for Devastated France.

The emblem on the new cover of the Review, appearing for the first time with this number, is the work of Dorothea Davis Curtis (First Overseas Unit of P. T.'s).

The Editor of the P. T. Review (Elizabeth Huntington) has written some poems that will be published in book form on Oct. 15. (Title: The Playground of the Gods and Other Poems. The Four Seas Co., 168 Dartmouth St., Boston.) Anyone interested can order a copy through the nearest good bookseller.

Book Reviews

("A Civilian Surgeon's Story of the Great War," by H. Winnett Orr, M. D., F. A. C. S.)

The first chapters of Dr. Winnett Orr's "A Civilian Surgeon's Story of the Great War" (Nebraska State Medical Journal, May and June, 1921) give a vivid picture of his experiences that will remind ex-army Aides of their own adventures in the service. Dr. Orr describes different phases (the gathering of equipment, the problem of entertainment, conditions in the hospitals, etc.) in a way that shows the spirit of that time as do few accounts of personal experiences in the War. Anyone who served with the A. E. F. will enjoy reading Dr. Orr's story.

The Department of Physiotherapy at the Mayo Clinic in Rochester, Minnesota

By ROSALIE DONALDSON.

THE Department of Physiotherapy at the Mayo Clinic, under the supervision of Dr. M. S. Henderson, head of the Section of Orthopedic Surgery, was organized in November, 1918, by Miss Antoinette White, a graduate of the Sargent School for Physical Education, who has also completed one of the courses given by the Harvard Infantile Paralysis Commission.

Two rooms on the second floor, and a sun porch and one room on the first floor—for the wheel chair patients—are given over to the work. The equipment is simple. In the room where the patients with scoliosis are treated is a full-length mirror before which they do practically all their exercises; there are also stall-bars, wands and dumb-bells. The equipment includes the Radio-Vitant portable bakers, either wet or dry pack being used as indicated. In arthritis, the wet packs usually afford the most relief. As yet no provision for treatment by electricity has been made. Besides the work in the clinic, a few patients confined to bed in one of the nearby hospitals are treated. Two technicians and one assistant carry on the work.

The patients are practically all from the Section of Orthopedic Surgery. Fractures, flat feet, arthritis and various post-operative conditions are treated. Patients with infantile paralysis come for examination of the muscles and for exercise; those with spastic paralysis, scoliosis and faulty posture come for exercises; those with tuberculosis, for heliotherapy. Occasionally patients with hemiplegia and nerve injuries are referred from other departments in the clinic. Since few of the patients with infantile paralysis and scoliosis can stay for any length of time, the treatment is confined to the simplest exercises, and the parents are shown how to give them at home. The patients are requested to report at intervals for observation. Infantile paralysis is treated by the method described by Lovett.

The sun porch, which was opened in September, 1920, has an awning round the sides that acts as a screen and a wind break. It is furnished with a few army cots and with reclining chairs. The porch is used only in warm weather, as the patients usually stay just long enough to start the treatment and learn how to continue it at home. In winter and on rainy or cloudy days an Alpine Sun

Lamp is used. Charts are kept showing the patient's temperature before and after treatment, and the length of time that he has been exposed. A Thezac-Porsmeur lens is used in the treatment of osteomyelitis, draining sinuses and chronic ulcers. This lens, adapted from the one designed by Lovett, is mounted on a stand, with an arrangement of screws and without the canvas cylinder—which makes it the easier to adjust. It is practically like the lenses in use at the J. N. Adam Memorial Hospital at Perrysburg, New York.

It would seem that heliotherapy in connection with these cases should be included in the work of the physiotherapy department. It is still in the experimental stage, but so far as is known the results have been encouraging, and it is being continued in the clinic.

REFERENCES

1. Lovett, R. W.: The treatment of infantile paralysis. Philadelphia, Blakiston, 1917, 175pp.

2. Lovett, R. W.: The Thezac-Porsmeur method of sun-treatment. Jour. Am. Med. Assn., 1920, lxxiv, 944-947.

S. O. S.

Anyone who took the war course at Harvard Medical School, and who wishes a position in Boston, kindly write to Miss Janet B. Merrill, 300 Longwood Avenue, Boston, Mass.

The Peking Union Medical College (Rockefeller Foundation) Peking, China, wants a head P. T. Adequate equipment; assistants to be trained by head P. T.; work with men of high professional standing. Electricity, hydro-therapy, massage and baking. Candidate, if qualified to give most of those forms of treatment, will have opportunity for further training before leaving America. Applicants address: Dr. Andrew H. Wood, Dept. of Neurology, Peking Union Medical College, Peking, China.

(All P. T.'s who worked with Dr. Wood overseas will realize what a splendid opportunity this is.)

California Heard From

Following are the main points in the constitution of the California Association of Physiotherapists as approved by the Medical Society (at the annual meeting at Coronado on May 11th) and by the League for the Conservation of Public Health. The points were adopted by the Association on May 17th.

1. Men and women may belong.

2. Active membership is open to only those actively engaged in Physiotherapy.

3. Associate membership to be offered to educators, scientists and medical men actively interested in Physiotherapy.

4. The Advisory Council consists of the Council of the League for the Conservation of Public Health and the Officers and Executive Committee of the California Association of Physiotherapists. The Advisory Council is the Association's affilation with the Medical Society, and its opinions and advice govern the action of the Association.

5. The only official publications are the "Journal" of the Medical Society and "Better Health" (the League). The Association is to have its regular place in those journals.

6. The Association is to hold its State Convention at the same time that the California Medical Society hold theirs, and it will be considered the Physiotherapy section of the Society.

All Los Angeles girls who have been asked to join the Association have responded. At present the California Association numbers thirty-two San Francisco members, five applicants, and about nine eligibles from Los Angeles..

At the first meeting of the Association, Miss Hogue, Superintendent of Nurses at Sanford Hospital, spoke on "Hospital Ethics." At the second, Dr. Charles L. Tranter spoke on "Nerve Injuries." The Association is printing letterheads, membership cards, application cards, etc.

Physiotherapy was one of the subjects discussed at the annual hospital conference of the League of the Conservation of Public Health, June 23rd to 25th. Dr. E. W. Cleary read the opening paper, which was discussed by Dr. Morton Gibbons, Medical Director of the State Accident Commission, and Miss Hazel Furchgott.

On July 23rd the American Physical Education Association, at its annual convention held in Berkeley, Cal., featured the following program for the "Therapeutic Section."

Dr. E. W. Cleary: Physiotherapy.

Miss Hazel Furchgott: A Working Clinic for Industrial Accident Cases.

Mrs. C. W. Hall: Physical Education for Crippled Children in Cleveland.

Dr. C. E. Le Roy Lowman: The Gymnastic Department in Surgical Practice.

Reports on Physiotherapy from the Pacific Coast.

Subscriptions

Anyone who wishes to subscribe to the "P. T." REVIEW may do so by sending name and address with $1.00 to Miss Marion Dawson, 25 Audubon Road, Boston, Mass. The REVIEW is to be a quarterly publication.

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"Nothing definite has been done," writes a correspondent whose astonishment at the delay is refreshing, "about the cut in Commutations, and several Aides have already resigned from the Public Health Service. Unless there is some remedy soon, it is expected that others will do the same."

New Members, A. W. P. T. A.

Honorary:

Dr. Lloyd Brown, 372 Marlborough St., Boston, Mass.

Dr. Henry J. Fitzsimmons, 520 Beacon Street, Boston, Mass.

Appleby, Sarah—Glen Cove, Long Island, N. Y.

Bird, Ruth—c/o Dr. C. F. Eisenbary, 702 Paulsen Bldg., Spokane, Wash.

Bloom, Marion—430 M St., N. W., Washington, D. C.

Collins, Marguerite—Sanderson, Texas.

Crowe, Dorothea—1469 Beacon St., Brookline, Mass.

Curtis, Mrs. Dorothea Davis—901 13th St., Washington, D. C.

Hislop, Dora—133 Waterman St., Providence, R. I.

Litzenburg, Emma, P. H. S. Hospital No. 67, Kansas, Mo.

Marvin, Blanche—1225 Rialto Bldg., Kansas City, Mo.

Parker, Edna—University Hospital, Iowa City, Iowa.

Paul, Marie—655 No. 44th St., Philadelphia, Pa.

Rowan, Letitia—c/o Dr. Armstrong, Ballymeena, Ireland.

Sherwin, Mrs. Lillian F.—1341 Ferry St., Eugene, Ore.

Sherburne, Mary A.—15 Percy Road, Lexington, Mass.

Smith, Edith C.—54 High St., Geneva, N. Y.

Zernow, Leila R.—23 Belair Road, Rosebank, Staten Island, N. Y.

Miss Anne R. Gustin, of 281 Park St., Newton, Mass., one of the first members of the National Association, died recently of pneumonia in Edinburgh, Scotland. During the War Miss Gustin was stationed at Ft. Des Moines, Iowa. She was loved and admired by all who knew her.

Comedy Column

We'll Say So

Miss Sanderson has "a good one" that will find its way to the centers of humor in all ex-wearers of the cock cockade.

It seems that one day, while travelling in a mile-a-week French flyer, she was occupying her mind with thoughts about the Re-Aide uniform hats. Their selection had meant weeks of careful planning —for it had not been easy to hit upon just the right combination of dignity, sprightliness and suitability—and Miss Sanderson was congratulating herself on the result.

Looking up and seeing that the affable "shavetail" opposite was regarding her with frank and sustained interest, and seemed on the point of speaking, she inquired:

"Have we met somewhere before?"

To which the "looty":

"Oh, no. I was just looking at your hat."

"My hat?" (A thrill of pride! !)

"Yes. I was thinking that it took a —— good-looking woman to get away with it!"

Well,—Perhaps

A certain P. T., who has been zealous in the pursuit of the bonus elusive, writes that in reply to her innumerable demands, pleas, exhortations, statements, affidavits, data, credentials, and orations, has received a letter asking her if she is quite certain that she was in the Army.

The Fatted Calf

A certain overseas P. T. was told on her arrival at home that the first dinner was going to be "out of sight"—one of those soup-to-nuts, olive-and-anchovy, minus *l'addition* affairs about which she'd dreamed for eighteen months. *Presto!* While the poor cove waited, breathless with expectation, the fond family proudly bore in the *piéce de résistance*—a massive, smoking, shell-pink salmon.

(Don't call the house to inquire for her. Any sound like a dinner bell brings on a relapse.)

You Tell 'Em

It has been suggested that Miss Russel and Miss Acheson might find this sign useful during the slack season on their hen farm:

"If you don't lay for me, I'll lay for you!"

Donnerwetter!

We have it on good authority that in cobbled Coblenz the official lid is off—the Wet Blankets are *kaput!* An Aide writes that cockades are no longer fashionable, that dancing at the Casino is no longer reprehensible, that a special bus takes the hospital harmony fans to and from the opera house.

(Some of us are always just missing things.)

None But the Truthful Need Apply

How many are still wearing the A. N. C. uniforms—minus the roulette wheel cut to the coats, we hope—that were salvaged from Brest?

How many turn pale when they hear the words "emergency" and "service" being coupled?

To how many does "back home" seem farther away from Paris than Paris did from "back home?"

Sociable

The lieutenant in charge of a stevedore outfit (which, by the way, had not been paid in several months) was addressed by one of his contingent members as follows:

"Lutenan' suh, Ah'd lak to hab a pay-ass to go to Bo-deaux!"

"A pass to Bordeaux?" repeated the officer. "What would you do in Bordeaux? You haven't any money have you?"

"No, sah," came the answer, "but Ah jus' wants to mingle!"

Scenes from Clinical Life.
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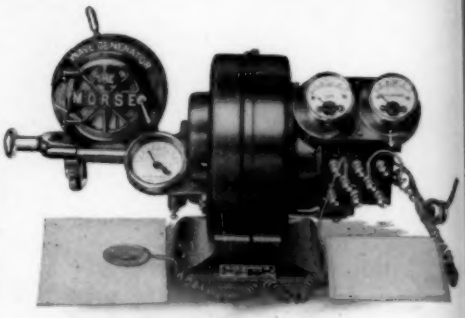

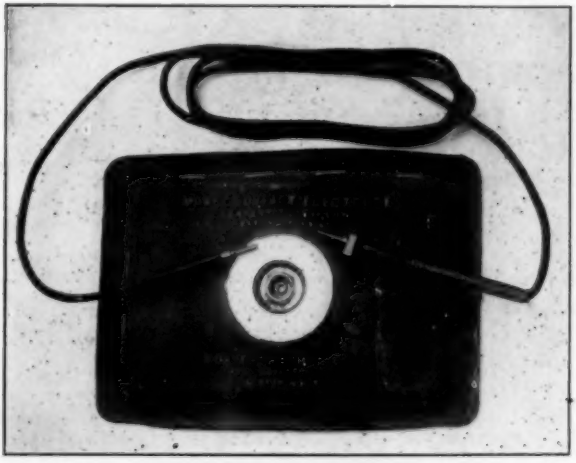

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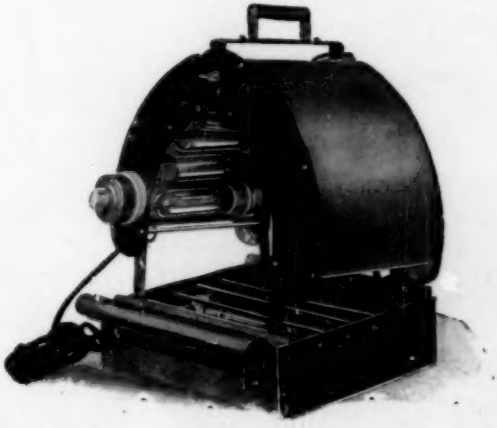

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